Contents of Volume 62

NO. 1. JULY 1989

Hypoxic Changes in Hippocampal Neurons
J. Leblond and K. Krnjević 1

Changes in Membrane Currents of Hippocampal Neurons Evoked by Brief Anoxia
K. Krnjević and J. Leblond 15

Modulation of Pursuit Eye Movements by Stimulation of Cortical Areas MT and MST
H. Komatsu and R. H. Wurtz 31

Neural Control of Vascular Permeability: Interactions Between Primary Afferents, Mast Cells, and Sympathetic Efferents
T. J. Coderre, A. I. Basbaum, and J. D. Levine 48

Identification of Excitatory Interneurons Contributing to Generation of Locomotion in Lamprey: Structure, Pharmacology, and Function
J. T. Buchanan, S. Grillner, S. Cullheim, and M. Risling 59

Abducens Internuclear Neurons Carry an Inappropriate Signal for Ocular Convergence
P. D. R. Gamlin, J. W. Gnadt, and L. E. Mays 70

Lidocaine-Induced Unilateral Internuclear Ophthalmoplegia: Effects on Convergence and Conjugate Eye Movements
P. D. R. Gamlin, J. W. Gnadt, and L. E. Mays 82

Primary Afferent-Evoked Synaptic Responses and Slow Potential Generation in Rat Substantia Gelatinosa Neurons In Vitro
M. Yoshimura and T. M. Jessell 96

Membrane Properties of Rat Substantia Gelatinosa Neurons In Vitro
M. Yoshimura and T. M. Jessell 109

Effects of Ionic Calcium on the Responses of Canine Testicular Polymodal Receptors to Algesic Substances
J. Sato, K. Mizumura, and T. Kumazawa 119

Induction of Paroxysmal Discharges in the Dentate Gyrus: Frequency Dependence and Relationship to Afterdischarge Production
J. L. Stringer, J. M. Williamson, and E. W. Lothman 126

Maximal Dentate Gyrus Activation: Characteristics and Alterations After Repeated Seizures
J. L. Stringer and E. W. Lothman 136

Responses of Low-Frequency Cells in the Inferior Colliculus to Interaural Time Differences of Clicks: Excitatory and Inhibitory Components
L. H. Carney and T. C. T. Yin 144

Mutable and Immutable Features of Paw-Shake Responses After Hindlimb Deafferentation in the Cat
G. F. Koshland and J. L. Smith 162

Dendrotoxin Blocks Accommodation in Frog Myelinated Axons
M. O. Poulter, T. Hashiguchi, and A. L. Padjen 174

Chronic Recordings From Single Sites of Kitten Striate Cortex During Experience-Dependent Modifications of Receptive-Field Properties
L. Mioche and W. Singer 185

Cerebellar Neuronal Activity Related to Whole-Arm Reaching Movements in the Monkey
P. A. Fortier, J. F. Kalaska, and A. M. Smith 198

Evidence That Peaks in EMG Averages Can Sometimes be Caused by Inhibition of Motoneurons
C. G. Widmer and J. P. Lund 212

Differential Effects of Morphine and Clonidine on Visceral and Cutaneous Spinal Nociceptive Transmission in the Rat
T. J. Ness and G. F. Gebhart 220
Properties of Motor Units in Nerve-Intact Autografts of Cat Extensor Digitorum Longus Muscles
T. G. Sandercock, C. Côté, and J. A. Faulkner 231
Phosphatidylinositol System's Role in Serotonin-Induced Facilitation at the Crayfish Neuromuscular Junction
D. Dixon and H. L. Atwood 239
Contribution of the Otoliths to the Calculation of Linear Displacement
I. Israël and A. Berthoz 247
Performance of the Human Vestibuloocular Reflex During Locomotion
G. E. Grossman, R. J. Leigh, E. N. Bruce, W. P. Huebner, and D. J. Lanska 264
Mastication in the Rabbit: A Description of Movement and Muscle Activity
G. Schwartz, S. Enomoto, C. Valiquette, and J. P. Lund 273
Efferent Neurons and Suspected Interneurons in S-1 Vibrissa Cortex of the Awake Rabbit: Receptive Fields and Axonal Properties
H. A. Swadlow 288
Announcements 309

NO. 2. AUGUST 1989

Effects of Preventing Reinnervation on Axotomized Spinal Motoneurons in The Cat. I. Motoneuron Electrical Properties
M. J. Pinter and S. Vanden Noven 311
Effects of Preventing Reinnervation on Axotomized Spinal Motoneurons in The Cat. II. Changes in Group Ia Synaptic Function
S. Vanden Noven and M. J. Pinter 325
Excitatory Neurotransmission Activates Voltage-Dependent Properties in Neurons in Spinal Motor System of Lamprey
S. Alford and K. A. Sigvardt 334
Organizing Principles for Single-Joint Movements. I. A Speed-Insensitive Strategy
G. L. Gottlieb, D. M. Corcos, and G. C. Agarwal 342
Organizing Principles for Single-Joint Movements. II. A Speed-Sensitive Strategy
D. M. Corcos, G. L. Gottlieb, and G. C. Agarwal 358
Deep Neurons in Piriform Cortex. I. Morphology and Synaptically Evoked Responses Including a Unique High-Amplitude Paired Shock Facilitation
G.-F. Tseng and L. B. Haberly 369
Deep Neurons in Piriform Cortex. II. Membrane Properties That Underlie Unusual Synaptic Responses
G.-F. Tseng and L. B. Haberly 386
Vagal Afferent Modulation of Spinal Nociceptive Transmission in the Rat
K. Ren, A. Randich, and G. F. Gebhart 401
Quantitative Analysis of Visual Receptive Fields of Neurons in Nucleus of the Optic Tract and Dorsal Terminal Nucleus of the Accessory Optic Tract in Macaque Monkey
K.-P. Hoffmann and C. Distler 416
The Detection and Perceived Intensity of Noxious Thermal Stimuli in Monkey and in Human
D. R. Kenshalo, Jr., F. Anton, and R. Dubner 429
Responses of Monkey Medullary Dorsal Horn Neurons During the Detection of Noxious Heat Stimuli
W. Maixner, R. Dubner, D. R. Kenshalo, Jr., M. C. Bushnell, and J.-L. Oliveras 437

The Correlation of Monkey Medullary Dorsal Horn Neuronal Activity and the Perceived Intensity of Noxious Heat Stimuli
R. Dubner, D. R. Kenshalo, Jr., W. Maixner, M. C. Bushnell, and J.-L. Oliveras 450
Chronic Epileptic Foci In Vitro in Hippocampal Slices From Rats With the Tetanus Toxin Epileptic Syndrome
J. G. R. Jefferys 458
Analysis of Vertebrate Eye Movements Following Intravitreal Drug Injections. III. Spontaneous Nystagmus is Modulated by the $GABA_a$ Receptor
M. Ariel 469
5-HT-Mediated Synaptic Potentials in the Dorsal Raphe Nucleus: Interactions With Excitatory Amino Acid and GABA Neurotransmission
Z. Z. Pan, W. F. Colmers, and J. T. Williams 481
Influence of Somatosensory Cortex on Different Classes of Cat Motor Cortex Output Neuron
P. Zarzecki 487
Kainate Receptor-Mediated Synaptic Currents in Mudpuppy Inner Retinal Neurons Reduced by D-*O*-Phosphoserine
P. A. Coleman and R. F. Miller 495
Cross-Correlation Analysis of Taste Neuron Pairs in Rat Solitary Tract Nucleus
M. Adachi, T. Ohshima, S. Yamada, and T. Satoh 501
Nociceptive Neurons in Rat Superior Colliculus: Response Properties, Topography, and Functional Implications
J. G. McHaffie, C.-Q. Kao, and B. E. Stein 510
Binocular Interactions in the Cat's Dorsal Lateral Geniculate Nucleus. I. Spatial-Frequency Analysis of Responses of X, Y, and W Cells to Nondominant-Eye Stimulation
W. Guido, N. Tumosa, and P. D. Spear 526
Monocular and Binocular Response Properties of Cells in the Striate-Recipient Zone of the Cat's Lateral Posterior-Pulvinar Complex
C. Casanova, R. D. Freeman, and J. P. Nordmann 544
Serotonergic/Cholinergic Muscle Receptor Cells in the Crab Stomatogastric Nervous System. I. Identification and Characterization of the Gastropyloric Receptor Cells
P. S. Katz, M. H. Eigg, and R. M. Harris-Warrick 558
Serotonergic/Cholinergic Muscle Receptor Cells in the Crab Stomatogastric Nervous System. II. Rapid Nicotinic and Prolonged Modulatory Effects on Neurons in the Stomatogastric Ganglion
P. S. Katz and R. M. Harris-Warrick 571
Sensorimotor Representations for Pointing to Targets in Three-Dimensional Space
J. F. Soechting and M. Flanders 582
Errors in Pointing are Due to Approximations in Sensorimotor Transformations
J. F. Soechting and M. Flanders 595

NO. 3. SEPTEMBER 1989

Patterns of Intracellular Potentials in Salamander Mitral/Tufted Cells in Response to Odor Stimulation
K. A. Hamilton and J. S. Kauer 609
Analysis of Motion of the Visual Field by Direction, Expansion/Contraction, and Rotation Cells Clustered in the Dorsal Part of the Medial Superior Temporal Area of the Macaque Monkey
K. Tanaka and H.-A. Saito 626

Underlying Mechanisms of the Response Specificity of Expansion/Contraction and Rotation Cells in the Dorsal Part of the Medial Superior Temporal Area of the Macaque Monkey
K. Tanaka, Y. Fukada, and H.-A. Saito 642
Bullfrog Dorsal Root Ganglion Cells Having Tetrodotoxin-Resistant Spikes are Endowed With Nicotinic Receptors
K. Morita and Y. Katayama 657
Serotonergic Modulation of Two Potassium Currents in the Pleural Sensory Neurons of *Aplysia*
D. A. Baxter and J. H. Byrne 665
Interlimb Coordination of Leg-Muscle Activation During Perturbation of Stance in Humans
V. Dietz, G. A. Horstmann, and W. Berger 680
Human Cortical Potentials Evoked by Stimulation of the Median Nerve. I Cytoarchitectonic Areas Generating Short-Latency Activity
T. Allison, G. McCarthy, C. C. Wood, T. M. Darcey, D. D. Spencer, and P. D. Williamson 694
Human Cortical Potentials Evoked by Stimulation of the Median Nerve. II Cytoarchitectonic Areas Generating Long-Latency Activity
T. Allison, G. McCarthy, C. C. Wood, P. D. Williamson, and D. D. Spencer 711
Classification of Turtle Retinal Ganglion Cells
A. M. Granda and J. E. Fulbrook 723
Bifurcation Analysis of Nonlinear Retinal Horizontal Cell Models. I. Properties of Isolated Cells
R. L. Winslow 738
Kinematic Strategies and Sensorimotor Transformations in the Wiping Movements of Frogs
S. F. Giszter, J. McIntyre, and E. Bizzi 750
Two Components of Rapid Sensory Adaptation in a Cockroach Mechanoreceptor Neuron
A. S. French 768
Responses of Primate Spinothalamic Tract Neurons to Renal Pelvic Distension
W. S. Ammons 778
Unilateral Auditory Cortex Ablation in Macaques Results in a Contralateral Hearing Loss
H. E. Heffner and R. S. Heffner 789
K^+-Channel Blockade in Trigeminal Root Ganglion Neurons: Effects on Membrane Outward Currents
I. Spigelman and E. Puil 802
Consequences of 4-Aminopyridine Applications to Trigeminal Root Ganglion Neurons
E. Puil, R. M. Miura, and I. Spigelman 810
Announcements 821

NO. 4. OCTOBER 1989

Across Unit Patterns in the Neural Response to Taste: Vector Space Analysis
P. M. Di Lorenzo 823
Difference in Distribution of Central Terminals Between Visceral and Somatic Unmyelinated (C) Primary Afferent Fibers
Y. Sugiura, N. Terui, and Y. Hosoya 834
Influence of Central Set on Human Postural Responses
F. B. Horak, H. C. Diener, and L. M. Nashner 841

A Comparative Study of the Changes in Receptive-Field Properties of Multireceptive and Nocireceptive Rat Dorsal Horn Neurons Following Noxious Mechanical Stimulation
J. M. A. Laird and F. Cervero 854
Photoreceptor to Horizontal Cell Synaptic Transfer in the *Xenopus* Retina: Modulation by Dopamine Ligands and a Circuit Model for Interactions of Rod and Cone Inputs
P. Witkovsky, S. Stone, and D. Tranchina 864
Anoxia Produces Smaller Changes in Synaptic Transmission, Membrane Potential, and Input Resistance in Immature Rat Hippocampus
E. Cherubini, Y. Ben-Ari, and K. Krnjević 882
Anoxia on Slow Inward Currents of Immature Hippocampal Neurons
K. Krnjević, E. Cherubini, and Y. Ben-Ari 896
Subthreshold Components of the Cutaneous Mechanoreceptive Fields of Dorsal Horn Neurons in the Rat Lumbar Spinal Cord
C. J. Woolf and A. E. King 907
Neck Muscle Spindle Activity in the Decerebrate, Unparalyzed Cat: Dynamics and Influence of Vestibular Stimulation
J. Kasper, V. J. Wilson, Y. Yamagata, and B. J. Yates 917
Studies of Solitary Semicircular Canal Hair Cells in the Adult Pigeon. I. Frequency- and Time-Domain Analysis of Active and Passive Membrane Properties
M. J. Correia, B. N. Christensen, L. E. Moore, and D. G. Lang 924
Studies of Solitary Semicircular Canal Hair Cells in the Adult Pigeon. II. Voltage-Dependent Ionic Conductances
D. G. Lang and M. J. Correia 935
Effect of Electrical Stimulation of Locus Coeruleus on the Activity of Neurons in the Cat Visual Cortex
H. Sato, K. Fox, and N. W. Daw 946
Digit-Muscle Responses Evoked from Multiple Intracortical Foci in Monkey Precentral Motor Cortex
K. C. Sato and J. Tanji 959
Receptor Characteristics of Periodontal Mechanosensitive Units Supplying the Cat's Lower Canine
A. R. Loescher and P. P. Robinson 971
Properties of Reinnervated Periodontal Mechanoreceptors After Inferior Alveolar Nerve Injuries in Cats
A. R. Loescher and P. P. Robinson 979
Membrane Current Underlying Muscarinic Cholinergic Excitation of Motoneurons in Lobster Cardiac Ganglion
J. E. Freschi and D. R. Livengood 984

NO. 5. NOVEMBER 1989

Mechanics of Stretch in Activated Crustacean Slow Muscle. I. Factors Affecting Peak Force
W. D. Chapple 997
Mechanics of Stretch in Activated Crustacean Slow Muscle. II. Dynamic Changes in Force in Response to Stretch
W. D. Chapple 1006
GABA as an Inhibitory Neurotransmitter in Human Cerebral Cortex
D. A. McCormick 1018
Encoding of Nociceptive Thermal Stimuli by Diffuse Noxious Inhibitory Controls in Humans
J. C. Willer, T. De Broucker, and D. Le Bars 1028

Response Properties in the Dorsal Lateral Geniculate Nucleus of the Adult Cat After Interruption of Prenatal Binocular Interactions
C. A. White, L. M. Chalupa, L. Maffei, M. A. Kirby, and B. Lia 1039
Intracellular Recording of Identified Neostriatal Patch and Matrix Spiny Cells in a Slice Preparation Preserving Cortical Inputs
Y. Kawaguchi, C. J. Wilson, and P. C. Emson 1052
Behavioral Inspiratory Inhibition: Inactivated and Activated Respiratory Cells
J. Orem 1069
Monosynaptic Excitatory Amino Acid Transmission From the Posterior Rhombencephalic Reticular Nucleus to Spinal Neurons Involved in the Control of Locomotion in Lamprey
Y. Ohta and S. Grillner 1079
Responses of Pigeon Horizontal Semicircular Canal Afferent Fibers. I. Step, Trapezoid, and Low-Frequency Sinusoid Mechanical and Rotational Stimulation
J. D. Dickman and M. J. Correia 1090
Responses of Pigeon Horizontal Semicircular Canal Afferent Fibers II. High-Frequency Mechanical Stimulation
J. D. Dickman and M. J. Correia 1102
Chemically and Electrically Coupled Interneurons Mediate Respiratory Pumping in *Aplysia*
J. Koester 1113
Corticomotoneuronal Postspike Effects in Averages of Unrectified EMG Activity
G. W. Botteron and P. D. Cheney 1127
Spatiospectral Properties of Goldfish Retinal Ganglion Cells
J. Bilotta and I. Abramov 1140
Synchronized Excitation and Inhibition Driven by Intrinsically Bursting Neurons in Neocortex
Y. Chagnac-Amitai and B. W. Connors 1149
Swimming in *Aplysia brasiliana:* Behavioral and Cellular Effects of Serotonin
D. W. Parsons and H. M. Pinsker 1163
Intra-Axonal Recordings of Cutaneous Primary Afferents During Fictive Locomotion in the Cat
J.-P. Gossard, J.-M. Cabelguen, and S. Rossignol 1177
Role of Competition Among Sensory Neurons in Regulation of Pattern of Innervation at Their Central and Peripheral Targets
B. Mendelson and E. Frank 1189

NO. 6. DECEMBER 1989

Strategies for Muscle Activation During Isometric Torque Generation at the Human Elbow
T. S. Buchanan, G. P. Rovai, and W. Z. Rymer 1201
Repetitive Firing Properties of Neurons in the Ventral Region of Nucleus Tractus Solitarius. In Vitro Studies in Adult and Neonatal Rat
G. G. Haddad and P. A. Getting 1213
Intracellular Analysis of Trigeminal Motoneuron Rhythmical Activity During Stimulation of Pontomedullary Reticular Formation in Anesthetized Guinea Pig
S. M. Gurahian, S. H. Chandler, and L. J. Goldberg 1225
Synaptic Connections Between Motor Neurons and Interneurons in the Fourth Thoracic Ganglion of the Crayfish, *Procambarus clarkii*
A. Chrachri and F. Clarac 1237
Conjoint Action of Phosphatidylinositol and Adenylate Cyclase Systems in Serotonin-Induced Facilitation at the Crayfish Neuromuscular Junction
D. Dixon and H. L. Atwood 1251

Descending Pathways to the Cutaneus Trunci Muscle Motoneuronal Cell Group in the Cat
G. Holstege and B. F. Blok 1260
Spatial Summation of Heat-Induced Pain: Influence of Stimulus Area and Spatial Separation of Stimuli on Perceived Pain Sensation Intensity and Unpleasantness
D. D. Price, J. G. McHaffie, and M. A. Larson 1270
Inward Rectification in Rat Nucleus Accumbens Neurons
N. Uchimura, E. Cherubini, and R. A. North 1280
Visual Activity in Area V2 During Reversible Inactivation of Area 17 in the Macaque Monkey
P. Girard and J. Bullier 1287
Classification of Unit Types in the Anteroventral Cochlear Nucleus: PST Histograms and Regularity Analysis
C. C. Blackburn and M. B. Sachs 1303
Morphological and Functional Aspects of Two Different Types of Hair Cells in the Goldfish Sacculus
I. Sugihara and T. Furukawa 1330
Task and Fatigue Effects on Low-Threshold Motor Units in Human Hand Muscle
R. M. Enoka, G. A. Robinson, and A. R. Kossev 1344
Does an Extraocular Proprioceptive Signal Reach the Superior Colliculus?
J. S. Nelson, M. A. Meredith, and B. E. Stein 1360
Localization of Tetrodotoxin-Sensitive Field Potentials of CA1 Pyramidal Cells in the Rat Hippocampus
R. W. Turner, D. E. R. Meyers, and J. L. Barker 1375
Differential Effects of Extra- and Intracellular Anions on GABA-Activated Currents in Bullfrog Sensory Neurons
N. Akaike, N. Inomata, and T. Yakushiji 1388
Glycine-Gated Chloride Current in Acutely Isolated Rat Hypothalamic Neurons
N. Akaike and M. Kaneda 1400
Simulation of Motion on the Skin. I. Receptive Fields and Temporal Frequency Coding by Cutaneous Mechanoreceptors of OPTACON Pulses Delivered to the Hand
E. P. Gardner and C. I. Palmer 1410
Simulation of Motion on the Skin. II. Cutaneous Mechanoreceptor Coding of the Width and Texture of Bar Patterns Displaced Across the OPTACON
E. P. Gardner and C. I. Palmer 1437
Ammonium Decreases Excitatory Synaptic Transmission in Cat Spinal Cord In Vivo
W. Raabe 1461

Subject Index to Volume 62 1475
Author Index to Volume 62 1483